						_
	Name	What	Input	Output	Supplier	Part no.
Electrical						
modules						
illoudico	T4	Oin DTD			0 -	DTD NDT 70 F
	T1	3 wire RTD			Omega	RTD-NPT-72-E
	T2	4 wire RTD			Omega	PR-21D-3-100-A-1/8-1500-M12-1
	T3	3 wire RTD			Omega	RTD-NPT-72-E
	T4	3 wire RTD			Omega	RTD-NPT-72-E
	T5	3 wire RTD			Omega	RTD-NPT-72-E
	DT4		0.001/D0	0.5.1/00	0	DV010 000AEV
	PT1	pressure transducer	9-30 VDC	0-5 VDC	Omega	PX319-300A5V
	PT2	pressure transducer	9-30 VDC	0-5 VDC	Omega	PX319-300A5V
		·				
	PT3	pressure transducer	9-30 VDC	0-5 VDC	Omega	PX319-300A5V
	PT4	pressure transducer	10-30 VDC	0-5 VDC	Setra	225 G250 PAD 42BB1
	PT5	pressure transducer	9-30 VDC	0-5 VDC	Omega	PX319-300A5V
	DTC	di duan faat musaa uus tuanadi saas	0.5.1/DC	0.5.1/00	Dudwara	00051/
	PT6	dytran fast pressure transducer	0-5 VDC	0-5 VDC	Dytran	2005V
	EV1	a a la mai di viali va	100 1/40 10 14		0	SV131
	EVI	solenoid valve	120 VAC, 10 W		Omega	SV131
	EV2	miniature solenoid valve	12, 24 VDC, 12	W may	Parker	009-0172-900
	EV3	miniature solenoid valve	12, 24 VDC, 12	W max	Parker	009-0172-900
	Pump	miniature piston pump	120 VAC, 40 W		Clark	ET-150
	H1	50 ohm resistive heater	50 W, 1 A		Cryocon	4039-012
	Lakeshore controlle	r Temperature controller for heater	120 VAC	50 W, 1 A	Lakeshore	DRC-93C
			0 ,, .0		_300.1010	
	DI1	Digital input 1	TTL		Kings	KC-79-67 QD
	DI2	Digital input 2	TTL		Kings	KC-79-67 QD
	DI3	Digital input 3	TTL		Kings	KC-79-67 QD
	DI4	Digital input 4	TTL		Kings	KC-79-67 QD
	DO4	District and the			17'	1/0 70 07 07
	DO1	Digital output 1		TTL	Kings	KC-79-67 QD
	DO2	Digital output 2		TTL	Kings	KC-79-67 QD
					_	
	DO3	Digital output 3		TTL	Kings	KC-79-67 QD
	DO4	Digital output 4		TTL	Kings	KC-79-67 QD
		3a. carbar .			90	
	Ac1	Acoustic transducer 1		0-5 V	IUSB	
	ACT	Acoustic transducer i		0-3 V	1000	
	Mightex	Mightex LED driver	120 VAC	1.5 A	MIghtex	Sirius Multichannel SLC LED driver
	Migritox	IVIIghtex LLD driver	120 VAO	1.0 /\	Wilgittex	Onida Mantenanner ded EED anver
	24 V supply 1		120 VAC, 60 W	24 V	Rhino	PSC-24-060
	24 V supply 2		120 VAC, 60 W	24 V	Rhino	PSC-24-060
	12 V supply		120 VAC, 15 W	12 V	Rhino	PSC-12-015
	v ouppry		0 0, 10 00	·- v		. 55 12 515
	D.I. 4	Callel atata valav	100 \/\0		Onto	40000
	Relav 1	Solid State relav	12() VA(; relav		UDIO	120D3
	Relay 1	Solid state relay	120 VAC relay		Opto	120D3
	Relay 2	Solid state relay	120 VAC relay 120 VAC relay		Opto	120D3 120D3
	Relay 2	Solid state relay	120 VAC relay		Opto	120D3
	Relay 2 Relay 3	Solid state relay Solid state relay	120 VAC relay 24 V relay		Opto Opto	120D3 DC60S3
	Relay 2	Solid state relay Solid state relay	120 VAC relay		Opto	120D3
	Relay 2 Relay 3	Solid state relay Solid state relay	120 VAC relay 24 V relay		Opto Opto	120D3 DC60S3
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay	120 VAC relay 24 V relay 24 V relay		Opto Opto Opto	120D3 DC60S3 DC60S3
	Relay 2 Relay 3	Solid state relay Solid state relay Solid state relay	120 VAC relay 24 V relay	X	Opto Opto	120D3 DC60S3
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX		Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX	TTL	Opto Opto Opto NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX		Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX	TTL	Opto Opto Opto NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA	TTL +-10 V	Opto Opto Opto NI NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX	TTL +-10 V	Opto Opto Opto NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25	TTL +-10 V 5 mA	Opto Opto Opto NI NI NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25	TTL +-10 V	Opto Opto Opto NI NI NI NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25	TTL +-10 V 5 mA	Opto Opto Opto NI NI NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25	TTL +-10 V 5 mA	Opto Opto Opto NI NI NI NI NI NI NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals	TTL +-10 V 5 mA 20 mA	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals	TTL +-10 V 5 mA	Opto Opto Opto NI NI NI NI NI NI NI NI NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals	TTL +-10 V 5 mA 20 mA	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
	Relay 2 Relay 3 Relay 4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals	TTL +-10 V 5 mA 20 mA	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
	Relay 2 Relay 3 Relay 4 cRIO module	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL	TTL +-10 V 5 mA 20 mA	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
	Relay 2 Relay 3 Relay 4 cRIO module	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL	TTL +-10 V 5 mA 20 mA	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
	Relay 2 Relay 3 Relay 4 cRIO module	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier	TTL +-10 V 5 mA 20 mA TTL Part number	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier	TTL +-10 V 5 mA 20 mA TTL Part number	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Pill line for low pressure accumulator Pump port for low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 45395K121 AD016B25T9A	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Pill line for low pressure accumulator Pump port for low pressure accumulator	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator	120 VAC relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 45395K121 AD016B25T9A	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Pitting at top of low pressure accumulator Fitting at top of low pressure accumulator Fitting at top of low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Parker	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A	Opto Opto Opto Opto NI NI NI NI NI NI NI NI 1	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Pitting at top of low pressure accumulator Fitting at top of low pressure accumulator Fitting at top of low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A	Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Swagelok Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Swagelok Swagelok Swagelok Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV10 MV11 MV12 MV13	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Parker Parker Parker	TTL +-10 V 5 mA 20 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Parker Parker Parker	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV10 MV11 MV12 MV13	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster Parker Parker Parker	TTL +-10 V 5 mA 20 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV10 MV11 MV12 MV13	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok McMaster McMaster McMaster	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV14 MV15	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 5S-4P4T4	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV14 MV15	Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV14 MV15	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 5S-4P4T4	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV14 MV15	Solid state relay Solid state relay Solid state relay Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +-10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Needle valve on fluid side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 5S-4P4T4	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217
Manual valves Miscellaneous	Relay 2 Relay 3 Relay 4 cRIO module Name MV1 MV2 MV3 MV4 MV5 MV6 MV7 MV8 MV9 MV10 MV11 MV12 MV13 MV14 MV15 F1	Solid state relay Sensor and digital i/o controller DIO 5 V TTL cRIO module AO +- 10 V AI +- 20 mA AI Universal AO 20 mA AI +- 10 V AI RTD DIO 5 V TTL cRIO module Location Line from cart to bubble chamber Needle valve behind EV2 Needle valve behind EV3 Fill line for high pressure accumulator Pump port for high pressure accumulator Fill line for low pressure accumulator Pump port for low pressure accumulator Fitting at top of high pressure accumulator Fitting at top of low pressure accumulator Fitting at top of hydraulic side, before PT4 Fill line of inner volume Bleed out valve for inner volume Inlet line from hydraulic cart Pump out port of hydraulic system on bubble chamber Valve for neslab return Filter on fill line of inner volume	120 VAC relay 24 V relay 24 V relay 24 V, 20 W MAX TTL +- 20 mA up to 60 V or 25 +- 10 V RTD signals TTL Supplier McMaster McMaster McMaster McMaster McMaster McMaster McMaster McMaster Swagelok	TTL +-10 V 5 mA 20 mA TTL Part number 45395K121 7836K25 7836K25 45395K121 45395K121 45395K121 45395K121 AD016B25T9A AD007B25T9A SS-4MG-VCR-6LVV-DPFR4-F 6LVV-DPFR4-F 6LVV-DPFR4-F 45395K121 45395K121 45395K121 45395K121 45395K121	Opto Opto Opto Opto NI	120D3 DC60S3 DC60S3 NI cRIO-9074 NI 9403 NI 9263 NI 9203 NI 9219 NI 9265 NI 9201 NI 9217

T1 - temperature sensor at top of top hat 3 wire RTD Omega RTD-NPT-72-E	Low voltage box, cRIO RTD module	Line +Excitation	Red	or Connector pins	Box wire colo	RTD 1	Notes TS-TE1 in flow diagram
Omega RTD-NPT-72-E	IIIOdule	-Excitation	Black	В	Black	RTD 2	
		Common	Black	С	Black	RTD 3	
			none	D	none	none	
T2 - temperature sensor at bottom of top hat							TS-TE2 in flow diagram
4 wire RTD Omega PR-21D-3-100-A-1/8-1500-M12-1	Input A						
Ош е уа гп-∠ти-э-тии-А-т/8-1500-М12-1							
Lakeshore Temperature Controller 7 pin output from back	Low voltage box, cRIO AI module	Voltage Out Voltage In		A B	Black White/Orange	AI 5	
7 pin odipat nom back		10 mV/K analog out (not ac	ctive)	С	Red	Al 6	
		Gnd for analog out	,	D	Black	AI 9	
		Setpoint out Gnd for Voltage Out and Se	otpoint out	E	Green Brown	Al 7 Al 9	
		Optional shield	etpoint out	Н	White/Blue	Al 9	
T3 - temperature sensor at top of bath 3 wire RTD	Low voltage box, cRIO RTD module	+Excitation -Excitation	Red Black	A B	Red Black	RTD 5 RTD 6	TS-TE3 in flow diagram
Omega RTD-NPT-72-E		Common	Black	С	Black	RTD 7	
- J			none	D	none	none	
T4 temperature concer at mid both	Low voltage box aPIO PTD module	+Excitation	Red	۸	Pod	RTD 9	TS TE4 in flow diagram
T4 - temperature sensor at mid bath 3 wire RTD	Low voltage box, cRIO RTD module	-Excitation	Black	A B	Red Black	RTD 10	TS-TE4 in flow diagram
Omega RTD-NPT-72-E		Common	Black	С	Black	RTD 11	
			none	D	none	none	
T5 - temperature sensor at bottom of bath	Low voltage box cRIO RTD module	+Excitation	Red	Α	Red	RTD 13	TS-TE5 in flow diagram
3 wire RTD	Induce	-Excitation	Black	В	Black	RTD 14	
Omega RTD-NPT-72-E		Common	Black	С	Black	RTD 15	
			none	D	none	none	
PT1 - pressure at hydraulic system	Low voltage box, cRIO AI module	+Excitation	Red	Α	Red	+12 V junction rail	
Omega PX319-300A5V	,	-Excitation	Green	В	Green	-12 V junction rail	-12 V junction rail is tied to Al 9 (common ground on Al module)
		Sgn	Black	С	Black	Al 0	
			none	D	none	none	
PT2 - high pressure accumulator	Low voltage box, cRIO AI module	+Excitation	Red	Α	Red	+12 V junction rail	
Omega PX319-300A5V		-Excitation	Green	В	Green	-12 V junction rail	-12 V junction rail is tied to Al 9 (common ground on Al module)
		Sgn	Black none	C D	Black none	Al 1 none	
			HOHE		IIOIIC	HOHE	
	Low voltage box, cRIO AI module	+Excitation	Red	Α	Red	+12 V junction rail	
Omega PX319-300A5V		-Excitation Sgn	Green Black	В	Green Black	-12 V junction rail Al 2	-12 V junction rail is tied to Al 9 (common ground on Al module)
		Sgn	none	D	none	none	
				_			
	Low voltage box, cRIO AI module	+Excitation	Red	A	Red	+12 V junction rail	
Setra 225 G250 PAD 42BB1		+Output -Output	Black Green	В	White Green	Al 3 Al 9	
		-Excitation	White	D	Black	-12 V junction rail	-12 V junction rail is tied to Al 9 (common ground on Al module)
PT5 - top hat pressure Omega PX319-300A5V	Low voltage box, cRIO AI module	+Excitation -Excitation	Red White	A B	Red Green	+12 V junction rail -12 V junction rail	-12 V junction rail is tied to Al 9 (common ground on Al module)
Offiega i Ad 19-300A3 v		Sgn	Green	С	Black	Al 4	-12 V junction rail is fied to Al 9 (common ground on Al module)
			none	D	none	none	
PT6 - Dytran fast pressure transducer	Dytran Current source	Provided cable					
Dytran 2005V	Dynan Current Source	i Tovided Cable					
		_					
Mightex box	Low voltage box, cRIO DIO module	+Cam 0 -Cam 0	Red Orange	A - A B - B	Red Orange	DI 0 DI 9 (cmn gnd)	
		+Cam 1	Black	H - C	Green	DI 1	
			Brown	J - D	Black	DI 10 (cmn gnd)	
		-Cam 1	DIOWII	-	Bidoit		
I ED array		-Cam 1	DIOWII	-	Diagram		
		-Cam 1	DIOWII		Juon		
Cam0		-Cam 1	DIOWII		Juon		
Cam0 Cam1	DI 1 4 to aDIO DIO mandula		BIOWIT			DI 10 10	
Cam0 Cam1 Trigger signals from PC and Labview	DI 1-4, to cRIO DIO module BNC inputs	-Cam 1 +TTL Gnd	DIOWIT		Red Black	DI 16-19 DI cmn gnd	
Cam0 Cam1 Trigger signals from PC and Labview	BNC inputs	+TTL Gnd	DIOWII		Red Black	DI cmn gnd	
Cam0 Cam1 Trigger signals from PC and Labview	BNC inputs DO 1-4, to cRIO DIO module	+TTL Gnd +TTL	DIOWII		Red Black Red	DI cmn gnd DO 24-27	
Cam0 Cam1 Trigger signals from PC and Labview	BNC inputs	+TTL Gnd	DIOWII		Red Black	DI cmn gnd	
Cam0 Cam1 Trigger signals from PC and Labview	BNC inputs DO 1-4, to cRIO DIO module	+TTL Gnd +TTL	Black	Conduit	Red Black Red	DI cmn gnd DO 24-27	Junction rail powered by relay 2, which is activated by DO 0 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview	BNC inputs DO 1-4, to cRIO DIO module BNC outputs	+TTL Gnd +TTL Gnd			Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd	Junction rail powered by relay 2, which is activated by DO 0 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral	Black Black	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail	
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak	BNC inputs DO 1-4, to cRIO DIO module BNC outputs	+TTL Gnd +TTL Gnd +120 AC	Black		Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail	Junction rail powered by relay 2, which is activated by DO 0 of cRIO Junction rail powered by relay 3, which is activated by D0 1 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V	Black Black Yellow Yellow	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V	Black Black Yellow Yellow	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail	
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V	Black Black Yellow Yellow	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +24 V -24 V	Black Black Yellow Yellow Yellow Yellow Black	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +24 V -24 V -120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO
EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +24 V -24 V	Black Black Yellow Yellow Yellow Yellow Black	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Black Gray Green Red	Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail CRIO +24 input	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral -24 V	Black Black Yellow Yellow Yellow Black Gray Green Red Black	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail Gnd junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +24 V -24 V	Black Black Yellow Yellow Yellow Black Gray Green Red Black Red	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral -24 V	Black Black Yellow Yellow Yellow Black Gray Green Red Black	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail Gnd junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Cond +120 AC Neutral Relay 1 Relay 2	Black Black Yellow Yellow Yellow Yellow Hack Gray Green Red Black Red Black Red Black White/Brown White/Yellow	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail -24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Gnd junction rail I20 VAC junction rail Neutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail -12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1)	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Cond +120 AC Neutral Relay 2 Relay 3	Black Black Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail -12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2)	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4	Black Black Yellow Yellow Yellow Yellow Hack Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Blue	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail -12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3)	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO
Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Cond +120 AC Neutral Relay 2 Relay 3	Black Black Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail 120 VAC junction rail Neutral junction rail Gnd junction rail Grid junction rail CRIO +24 input cRIO -24 input +12 V junction rail -12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10)	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +24 V -120 AC Neutral Gnd +24 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC +120 AC +120 AC	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Grange White/Gray Black	Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Gnd junction rail Gnd junction rail Reutral junction rail Gnd junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail -12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10)	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO
Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Gray Black Gray	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Reutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10) 120 VAC junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +24 V -120 AC Neutral Gnd +24 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC +120 AC +120 AC	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Grange White/Gray Black	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Gnd junction rail Gnd junction rail Reutral junction rail Gnd junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail -12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10)	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Gray Black Gray	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Reutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10) 120 VAC junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Gray Black Gray	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Reutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10) 120 VAC junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Gray Black Gray	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Reutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10) 120 VAC junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam0 Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Gray Black Gray	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Reutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10) 120 VAC junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers
Cam1 Trigger signals from PC and Labview EV1 - compression valve EV2 - high pressure tweak Parker 009-0172-900 EV3 - low pressure tweak Parker 009-0172-900 Pump Clark ET-150 pump High voltage box Power and relay lines to control system	BNC inputs DO 1-4, to cRIO DIO module BNC outputs High voltage box High voltage box High voltage box Low voltage box Voltage to cRIO, pressure transducers Relay lines to cRIO DIO module	+TTL Gnd +TTL Gnd +120 AC Neutral +24 V -24 V +120 AC Neutral Gnd +120 AC Neutral Gnd +24 V -12 V -12 V Relay 1 Relay 2 Relay 3 Relay 4 Relay Gnd +120 AC Neutral	Black Black Yellow Yellow Yellow Yellow Black Gray Green Red Black Red Black Red Black White/Brown White/Yellow White/Orange White/Gray Black Gray	Conduit Conduit Conduit Conduit	Red Black Red	DI cmn gnd DO 24-27 DO cmn gnd +120 AC junction rail Gnd junction rail +24 V junction rail -24 V junction rail -24 V junction rail -24 V junction rail Reutral junction rail Gnd junction rail CRIO +24 input cRIO -24 input +12 V junction rail DO 3 (Pin 4) DO 0 (Pin 1) DO 1 (Pin 2) DO 2 (Pin 3) DO 9 (Pin 10) 120 VAC junction rail Neutral junction rail	Junction rail powered by relay 3, which is activated by D0 1 of cRIO Junction rail powered by relay 4, which is activated by D0 2 of cRIO Junction rail powered by relay 1, which is activated by D0 3 of cRIO power for pressure transducers